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Localized measurements of electron temperature in hohlraum targets by x-ray spectroscopy *

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Current designs of targets for achieving fusion by indirect drive inertial confinement use gold cavities (hohlraums) that are filled with gas. To test our understanding of the bulk energetics in such designs we have measured the electron temperature at different positions within gas-filled Au hohlraums that are 2.75 mm long and 1.6 mm in diameter. Hydrodynamic simulations indicate that the electron temperature and density profiles can have significant differences. Data include x-ray spectra (2 - 4 Å) from mid-Z dopants as well as x-ray pinhole images of the targets. The analysis reveals a difference of up to 1.5 keV when comparing the temperatures between targets having different density gas fills. These results will be compared with calculations.

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